



# Topical corticosteroid misuse among females in Riyadh city

**Amar Fathi Mohamed Khalifa<sup>1</sup>, Adel Mehmas Hamdi Alragas<sup>2</sup>✉, Ashwaq Sari Abohamad<sup>3</sup>, Amer Abdulaziz Alharbi<sup>4</sup>, Hamdah Saud Alruwaili<sup>5</sup>, Mohammed Mousa Alghamdi<sup>6</sup>, Sarah Mohammed Almuashi<sup>7</sup>**

<sup>1</sup>Assistant Professor, Community Medicine, WHO Consultant, College of Medicine, Almaarefa University, Riyadh, Saudi Arabia; Email: akhalifah@mcst.edu.satel

<sup>2</sup>Staff pharmacist, pharmacy department, Investigational Drug and Research Unit, King Saud University Medical City, Riyadh, Saudi Arabia; Email: Ph.adel@hotmail.com

<sup>3</sup>Medical intern, College of Medicine, Alfarabi College, Riyadh, Saudi Arabia; Email: Ashwag-987@hotmail.com

<sup>4</sup>Medical Student, College of Medicine, Jouf University, Sakaka, Saudi Arabia; Email: Am99999er@gmail.com

<sup>5</sup>Medical intern, College of Medicine, Jouf University, Sakaka, Saudi Arabia; Email: Hamda1417@outlook.sa

<sup>6</sup>General Practitioner, College of Medicine, Almaarefa University, Riyadh, Saudi Arabia; Email: Malghamdi377@outlook.sa

<sup>7</sup>Medical intern, College of Medicine, umm Alqura University, Alqunfudah, Saudi Arabia; Email: Almashi64s1a@hotmail.com

## ✉ Corresponding author

Staff pharmacist, pharmacy department, Investigational Drug and Research Unit, King Saud University Medical City, Riyadh, Saudi Arabia;  
Email: Ph.adel@hotmail.com

## Citation

Amar Fathi Mohamed Khalifa, Adel Mehmas Hamdi Alragas, Ashwaq Sari Abohamad, Amer Abdulaziz Alharbi, Hamdah Saud Alruwaili, Mohammed Mousa Alghamdi, Sarah Mohammed Almuashi. Topical corticosteroid misuse among females in Riyadh city. *Medical Science*, 2021, 25(107), 120-125

## ABSTRACT

Topical corticosteroids are considered of the most used drugs by dermatologist to treat many of dermatological conditions. The key explanation for abuse and the production of side effects is the availability of potent topical corticosteroids at a low cost over the counter. To our knowledge, there is no study conducted in Riyadh looking for commonest adverse effect of topical corticosteroids misuse. Across sectional study was done on 459 females from Riyadh city, KSA, where data were collected using a pre-designed self-administered questionnaire. The questionnaire included items about participants' characters, reasons of using topical corticosteroids, types, duration and frequency of application of topical corticosteroids used, and the presence of side effects. Consent obtained prior to the collection of data stressing privacy and the right of participants to withdraw from the study at any time. More than 46.1% of the participants were 21 to 30 years of age. Skin whitening was the key justification for using topical corticosteroids. A rise in hair pressure (22%) accompanied by skin thinning (21.3%) was the most common adverse effect. There was a significant statistical relationship between age and justification for usage and a significant statistical relationship was found between marital status and



motives of using topical corticosteroids. Misuse of topical corticosteroids is prevalent among females in Riyadh for several reasons, the most important of which is skin whitening and lightening and the most common side effect was increase in hair intensity.

**Keywords:** Topical, corticosteroid, Misuse, Females, skin, effects

## 1. INTRODUCTION

Topical corticosteroids are considered one of the most dermatologist-used agents to treat many dermatological disorders and have been used for more than 100 years since hydrocortisone was introduced in 1952 (Sulzberger, 1952). These agents have substantial clinical effects that mediate the properties of anti-inflammatory, vasoconstrictive, antiproliferative and immunosuppressive agents (Al Dhalimi & Al Jawahiry, 2006). The primary explanation for abuse and production of side effects is the availability of potent topical corticosteroids at a low cost over the counter (Saraswat et al., 2011; Sendrasoa et al., 2017; Rath, 2006). Some patients often use topical steroids not just for well-known indications such as psoriasis, atopic dermatitis and vitiligo, but even for any dermatology issue or even undiagnosed skin rash, resulting in apparent adverse effects such as tinea incognito and acne, the most common skin atrophy and rosacea (Meena et al., 2017; Al Dhalimi & Al Jawahiry, 2006; Dey, 2014; Ference, 2009; Vidhya, 2016).

The misuse of topical steroids is a worldwide issue and several studies have been performed in different areas, for example in India (Dey, 2014; Jha et al., 2016), to understand the cause and implications of misuse. These studies showed that topical steroid misuse is enormous and more common in women, added to the study conducted in Antananarivo, Madagascar, showed that the most common reason for women to use topical steroids was for cosmetic purposes and similar to the study conducted in Iraq (Al Dhalimi & Al Jawahiry, 2006; Sendrasoa et al., 2017).

To our knowledge, despite topical steroid misuse being a big problem there is no study conducted in Riyadh, Saudi Arabia. We conduct this study to identify the reasons of using topical corticosteroids and the most common side effects.

## 2. METHODOLOGY

From June to September 2020, a cross-sectional analysis was carried out among Riyadh's female adult population. The sample size was 459 female participants and the ROSI Soft Calculator was used to measure it. A prevalence of 60% of misuse of topical corticosteroids among Saudi populations in the western region was reported in a previous study (Al Hawsawi et al., 2017). Using a confidence interval of 95% and a margin of error of 5% a minimum calculated sample size of 369 was calculated. A pre-coded and pre-tested self-administered questionnaire, developed specifically for this research, was used to collect data after consulting literature and epidemiologist. The questionnaire includes data about the questionnaire (sociodemographic information, reasons of using topical corticosteroids, Types of topical corticosteroids, duration of treatment with topical corticosteroids, frequency of application, adverse effects of topical corticosteroids). Data were analyzed using the SPSS version 23. Microsoft excel sheet was used to generate tables and charts. A P-value less than 0.05 were considered significant. The consents obtained from participants before data collection emphasizing on the right of participants to withdraw from the study at any point of time.

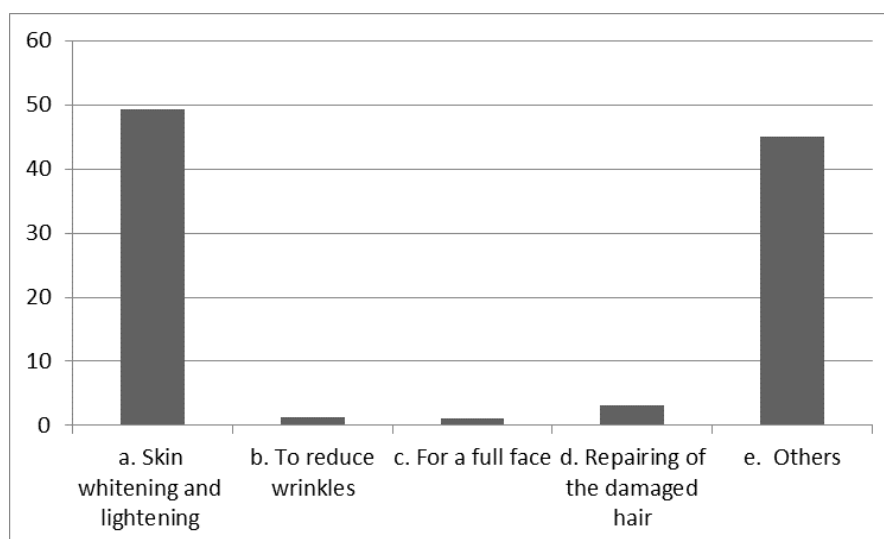
## 3. RESULTS

Table 1 shows that the final sample consisted of 459 study respondents, where two hundred and twelve (46.1%) in the age 21-30. Three hundred nineteen (69.4%) was single. Most of the respondents were student (24.8%), while most of the respondents were not having a fixed monthly income (49.4%). Figure 1 shows the commonest reason behind the use of topical corticosteroids was skin whitening and lightening. Figure 2 shows the commonest side effect was Increase in intensity of the hair.

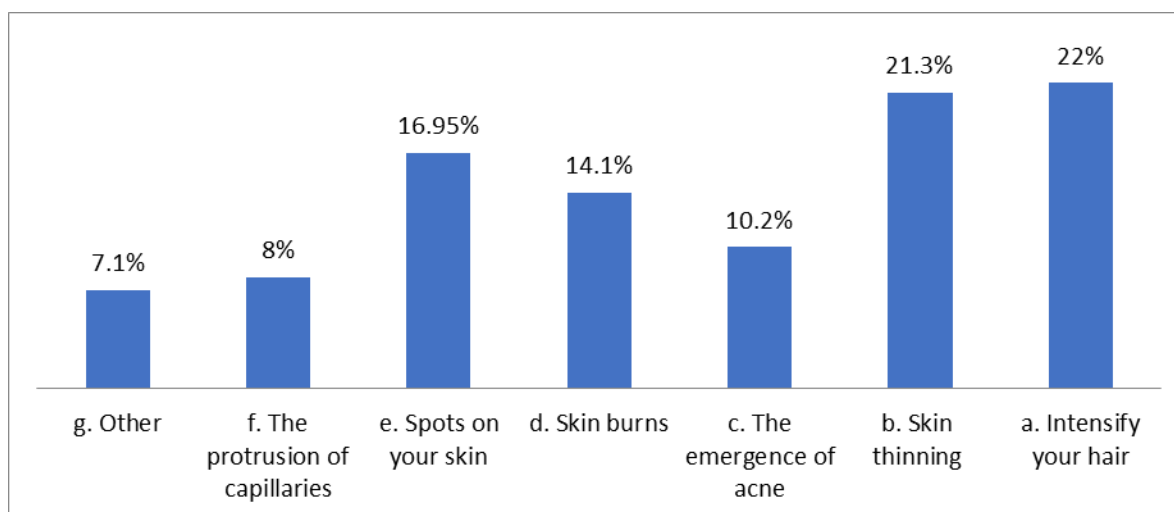
**Table 1** Sociodemographic Characteristics of Study Participants (n = 459)

Characteristics	Frequency	Percentage
Age		
<20 Years	134	29.1%
21-30	212	46.1%
31-40	75	16.3%
>41	38	8.20%
Marital Status		
Married	140	30.5%

Single	319	69.4%
Employment Status		
Student	218	24.8%
Employee	92	25.9%
Unemployed	149	24.8%
Monthly Income		
Not having a fixed monthly income	227	49.4%
Less than SAR 5,000	104	22.60%
From SAR 5,000 to SAR 10,000	71	15.40%
More than SAR 10,000	57	12.40%
Educational Level		
Primary	4	0.80%
Medium	6	1.30%
Secondary	131	28.5%
University and high level	318	69.2%



**Figure 1** Reason for Using Corticosteroid



**Figure 2** Side Effects of Using Topical Corticosteroids

Table 2 shows that single females are the one that misusing topical corticosteroids the most. Table 3 shows the age that mostly misuses topical corticosteroid were the age of 21-30 years old, and the most common reason was due to skin whitening and lightening. Table 4 shows that the age that mostly effected by topical corticosteroids side effects were the age of 31-40 years old. There is statistical relationship between using corticosteroids and age.

**Table 2** Relation between Reasons of Using Topical Corticosteroids and Marital Status

What is the purpose of this cosmetic use?	Marital Status n=459(100)		P value
	Married N= 140(30.6%)	Single N=319(69.4%)	
a. Skin whitening and lightening	45 (32%)	181 (57%)	p = 0.0001
b. To reduce wrinkles	4(2.5%)	2(1%)	
c. For a full face	5(3.5 %)	0	
d. Repairing of the damaged hair	15(11%)	0	
e. Others	71(51%)	136(42%)	

**Table 3** Relation between Age and Reason of Using Topical Corticosteroid

What is the purpose of this cosmetic use?	Age				P- value
	<20 Years N= 134(%)	21-30 years N=212(%)	31-40 years N=75(%)	>41 years N= 38(%)	
a. Skin whitening and lightening	45 (33.5%)	(58%)	40 (53%)	18 (47%)	0.027
b. To reduce wrinkles	4 (3%)	6 (0.004%)	(0.01%)	0	
c. For a full face	4 (3%)	0	0	1 (3%)	
d. Repairing of the damaged hair	10 (7.5%)	4 (2%)	(0.01%)	0	
e. Others	71 (53%)	84 (40 %)	33 (44%)	19 (50%)	

**Table 4** Relation between Age and Side Effect of Topical Corticosteroids Misuse

	Age				P value
	<20 Years N= 134(%)	21-30 years N=212(%)	31-40 years N=75(%)	>41 years N= 38(%)	
Side effects					0.034
a. Yes	25 (18.7%)	64 (30.2%)	24 (32%)	11 (29%)	
b. No	109 (81.3%)	148 (69.8%)	51 (68%)	27 (71%)	

#### 4. DISCUSSION

This study found that the most age group who misuse cortisone was 21-30 years which goes in line with study done by (Dey, 2014) on the other hand it goes in contrary with a study done by (Al Dhalimi & Al Jawahiry, 2006) which found that the most age group who misuse cortisone was 10-19 years. On the other hand , the study shows that the age that developed side effects the most was 31-40 years, which goes in contrary with (Mahar et al., 2016) which found that 20-29 years was the most common age group affected.

We found that the age that mostly misuse topical corticosteroid were the age of 21-30 years old and the most common reason was due to skin whitening and lightening which goes in line with (Dey, 2014). Although our study found that the single females was the ones who use topical cortisone the most and the reasons for theraputic purposes. In addition, this study found that the most common side effect was increase in hair intensity which goes in contrary with a study done by (Sendrasoa et al., 2017) which found that the most common side effect is pigmentation disorders while acne was the most common side effects on another studies done by (Manchanda et al., 2017; Dey, 2014).

We also found that the commonest reason behind the use of topical corticosteroids was due to cosmetic reasons which is skin whitening and lightening which goes in line with a study done by (Dey, 2014; Al Dhalimi & Al Jawahiry, 2006; Sendrasoa et al., 2017) and in contrary with a study done by (Manchanda et al., 2017) in which acne was the most common cause of using topical corticosteroids. A limitation of the present study was the use of self-administered questionnaire that may have a recall bias.

## 5. CONCLUSION

Misuse of topical corticosteroids is prevalent among females in Riyadh for several reasons, the most important of which is skin whitening and lightening and the most common side effect was increase in hair intensity.

### Acknowledgement

All authors gratefully acknowledge the cooperation of the pharmacy department and the Investigational Drug and Research Unit in King Saud University Medical City, The National Pharmacovigilance and Drug Safety Center in Saudi food and drug authority and Mr. Mohammad Adam Othman Fallatah.

### Author Contributions

Dr. Amar Fathi Mohamed Khalifa, Adel Mehmas Alragas and Ashwaq Sari Abohamad participated in development of study conception and design, acquisition of data, critical revision. Dr. Amer Abdulaziz Alharbi, Hamdah Saud Alruwaili and Mohammed Mousa Alghamdi participated in analysis and interpretation of data and drafting the manuscript. Dr. Sarah Mohammed Almuashi participated in drafting of manuscript and critical revision.

### Funding

This study has not received any external funding.

### Conflict of Interest

The authors declare that there are no conflicts of interests.

### Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

### Ethical approval

The study was approved by the Medical Ethics Committee of college of medicine, Al-Maarefa University, Riyadh, Saudi Arabia (ethical approval code: (6/201).

### Data and materials availability

All data associated with this study are present in the paper.

## REFERENCES AND NOTES

1. Al Dhalimi MA, Al Jawahiry N. Misuse of topical corticosteroids: a clinical study in an Iraqi hospital. *EMHJ-Eastern Mediterr Heal Journal* 2006;12 (6): 847-852.
2. Al Hawsawi K, Alaauldeen S, Albarnawi N, Mashrai H, Alosaimi R, Alsufyani H. Prevalence of misuse of topical corticosteroids among populations in western region of Saudi Arabia. *Int J Adv Res* 2017; 5(2):297-307.
3. Dey VK. Misuse of topical corticosteroids: A clinical study of adverse effects. *Indian Dermatol Online J*. 2014 Oct;5(4):436-40.
4. Ference JD, Last AR. Choosing topical corticosteroids. *Am Fam Physician* 2009;79(2):135-40.
5. Jha AK, Sinha R, Prasad S. Misuse of topical corticosteroids on the face: A cross-sectional study among dermatology outpatients. *Indian Dermatol Online J*. 2016 Jul-Aug;7(4):259-63.
6. Mahar S, Mahajan K, Agarwal S, Kar HK, Bhattacharya SK. Topical corticosteroid misuse: the scenario in patients attending a tertiary care hospital in New Delhi. *J Clin diagnostic Res JCDR* 2016;10(12):FC16-20.
7. Manchanda K, Mohanty S, Rohatgi PC. Misuse of topical corticosteroids over face: a clinical study. *Indian Dermatol Online J* 2017;8(3):186-91.
8. Meena S, Gupta LK, Khare AK, Balai M, Mittal A, Mehta S, Bhatni G. Topical Corticosteroids Abuse: A Clinical Study of Cutaneous Adverse Effects. *Indian J Dermatol* 2017;62(6):675-81.
9. Rathi S. Abuse of topical steroid as cosmetic cream: A social background of steroid dermatitis. *Indian J Dermatol*. 2006;51(2):154-5.
10. Saraswat A, Lahiri K, Chatterjee M, Barua S, Coondoo A, Mittal A, Panda S, Rajagopalan M, Sharma R, Abraham A, Verma SB, Srinivas CR. Topical corticosteroid abuse on the face: a prospective, multicenter study of dermatology outpatients. *Indian J Dermatol Venereol Leprol*. 2011 Mar-Apr;77(2):160-6..

11. Sendrasoa FA, Ranaivo IM, Andrianarison M, Raharolahy O, Razanakoto NH, Ramarozatovo LS, Rapelanoro Rabenja F. Misuse of Topical Corticosteroids for Cosmetic Purpose in Antananarivo, Madagascar. Biomed Res Int. 2017;2017:9637083.
12. Sendrasoa FA, Ranaivo IM, Andrianarison M, Raharolahy O, Razanakoto NH, Sulzberger MB. The effect of topically applied compound F in selected dermatoses. J Invest Dermatol 1952;19:101-2.
13. Vidhya V. FDA Approved Drugs – October 2015. Drug Discovery, 2016, 11(27), 8-12

**Peer-review**

External peer-review was done through double-blind method.

**Article History**

Received: 05 December 2020

Reviewed & Revised: 06/December/2020 to 11/January/2021

Accepted: 12 January 2021

E-publication: 15 January 2021

P-Publication: January 2021

**Publication License**

This work is licensed under a Creative Commons Attribution 4.0 International License.

**General Note**

We recommended authors to print article as color digital version in recycled paper. Discovery Scientific Society will not provide any prints for subscription.